Journal of the Society of Arts.

FRIDAY, AUGUST 3, 1855.

SOCIETY'S VISIT TO PARIS.

In accordance with the gracious recommendations contained in the letter of H.R.H. the Prince President of the Society, and which appeared in the last number, a visit of the Society to Paris has been fixed to take place from Monday the 3rd of September to Saturday the 15th of September.

Members will understand that, although the foregoing dates are mentioned, it is not necessary that parties joining in this visit should go and return on those days only. All that is meant is, that the Society will be represented officially in Paris during the period named.

For the accommodation of Members and their friends, arrangements have been made with the South Eastern Railway Company, and with the Brighton Railway Company, for the issue, at the Society's House, of return tickets to Paris and back.

The Passports when required will also be issued at the Society's House. The cost of the Return tickets to Paris and back will be as follows:—

By the South-Eastern Railway (Boulogne or Calais route), £4 10s. first class, £3 5s. second class.

On the above fares a considerable reduction is expected in the event of the Council being able to assure the South-Eastern Railway Company of sufficient numbers adopting this Route.

By the Brighton Railway (Dieppe and Rouen route), £2 8s. first class, £1 12s. second class.

The return ticket by the South-Eastern Railway is available for going and returning at any time within one month from the date of the ticket.

The return ticket by the Brighton Railway is available for going and returning at any time within fifteen days from the date of the ticket.

The cost of passports will be 5s. each.

A rendezvous for the use of the Members of the Society and their friends, and the Representatives from the Institutions during their stay in Paris has been obtained. Lord Stanley (of Alderley), the President of the Board of Trade, has kindly acceded to the request of the Council, and granted for this purpose the use of the House 14, Rue du Cirque, taken by the Board of Trade as the Head Quarters of the British Section of the Exhibition.

At this rendezvous information will be afforded as to Lodgings, Guides, &c., and from day to day visits to the several departments of the Universal Exhibition, and to different points of interest in Paris will be organized, and excursions to the celebrated places in the vicinity arranged.

A card, not transferable, entitling the holder by name to the privileges of this excursion, will be issued to the members on application at the Society's House, and also, on and after the 3rd of September, at the Rendezvous, 14, Rue du Cirque.

Every Member of the Society will have the privilege of taking, in addition to his own, tickets for two friends, either ladies or gentlemen.

The associated Institutions will each have the privilege of nominating a representative and two other persons, ladies or gentlemen, to join the party.

In order that any reduction may be obtained in the SOUTH-EASTERN FARES *as mentioned above, Members and Institutions are especially requested to send in their names on or before the 15th of August,* so as to enable me to ascertain what numbers are likely to take that route.

The railway tickets, passports, and cards will be issued from the Society's house, on and after the 27th of August, on receiving a remittance for the amount. Parties requiring tickets, &c., *must* send in *their names* and *those of their friends,* stating what *route* they purpose to take, and whether first or second class, and whether passports will be required, in which latter case the *Signatures* of the parties requiring passports must be sent.

ARTIZANS' VISIT TO PARIS.

By arrangements which have just been concluded, Artizans holding the Foreign Office passports, granted them free under the regulations lately issued, are entitled, on presentation of that passport, to travel at half-fares on the French lines of railway from Calais or Boulogne to Paris. The South-Eastern Railway has accorded the same privilege to Artizans travelling from London to Calais or Boulogne. The artizan has the choice of three fixed trains per day from London to one or other of those places, and an evening tidal train, viz., 8.10 a.m. express, 9.30 a.m., and 5.30 p.m. to Calais, and the evening tidal train for Boulogne; the departure of which latter train varies as the tide serves for crossing.

Third-class covered carriages are attached to each of the foregoing trains.

The *half* fare from London to Calais or Boulogne, is 10s. second class, 7s. 6d. third class.

From Boulogne to Paris, the *half* fare is 8s. 6d. second class, and 6s. 3d. third class.

From Calais to Paris, the *half* fare is 11s. 7d. second class, and 8s. 8d. third class.

In addition to the foregoing, the Eastern Counties Railway, in connection with a boat from Tilbury, undertake to convey passengers to

Boulogne and back for 15s. first class, and 12s. second class.

The following are the departures advertised for the present month:—

FROM LONDON *VIA* TILBURY.

Days of Departure.	Trains leave Fenchurch and Bishopsgate Stations.	Steamer leaves Tilbury.
Saturday . . .	4 Aug. *8.7 A.M.	9.15 A.M.
Tuesday . . .	7 „ 9.37 „	10.45 „
Thursday . . .	9 „ 10.37 „	11.45 „
Saturday . . .	11 „ 12.7 P.M.	1.15 P.M.
Tuesday . . .	14 „ 3.22 „	4.30 „
Thursday . . .	16 „ 3.22 „	4.30 „
Saturday . . .	18 „ *8.7 A.M.	9.15 A.M.
Tuesday . . .	21 „ *8.7 „	9.15 „
Thursday . . .	23 „ 9.37 „	10.45 „
Saturday . . .	25 „ 12.7 P.M.	1.15 P.M.
Tuesday . . .	28 „ 2.7 „	3.15 „
Thursday . . .	30 „ 4.22 „	5.30 „

* No Trains from Bishopsgate.

A refreshment room has been attached to the Exhibition, originally intended for the convenience of persons connected with the Exhibition, under the title of "Cantine Modèle."

The following are the Rules under which it was established, but since the opening the Imperial Commission has extended them, and Exhibitors, their Representatives and Servants, and Visitors to the Exhibition, are now allowed the privilege of making use of the "Cantine Modèle."

1st. A "Cantine Modèle" is established as part of the Exhibition in the south-east part of the garden near the "Cours la Reine." It is undertaken especially for the convenience of those acting under the Imperial Commission.

By the terms of the concession, the party undertaking this "Cantine Modèle" seeks no profit to himself, but devotes to works of charity whatever surplus the receipts will afford after payment of expenses.

2nd. The price of each article of food is fixed according to the tariff hereto annexed, approved by the Commissioner-General.

3rd. The Cantine furnishes gratuitously all articles for table use for those agents who wish to bring their own provisions, even when they require to be furnished with no additional articles of food; the Cantine takes charge of these provisions in a place specially provided until required.

4th. The hours for meals are fixed according to the Rules hereto annexed.

5th. Except at the hours of meals, no one will be received in the Cantine without a special pass.

6th. Agents and workmen employed in the Exhibition are admitted to the Cantine at the request of their masters, on the express condition of their observing the rules laid down.

7th. The consumers must abstain from everything tending to disturb order and raise disputes; a register is established for receiving all complaints.

The head of the Cantine and his staff must on their part place on this register every subject of complaint which the consumers make.

ORDER OF THE ARRANGEMENTS.

The Cantine opens at 6 o'clock, a.m.

From 6 a.m. to 6·55—Agents of all classes, such as inspectors, superintendents, and other persons acting under the Imperial Commission.

From 9 a.m. to 9·55—The workpeople of the exhibitors.

From 2 to 2·55—The workpeople of the exhibitors.

From 10 a.m. to 10·40—The keepers.—1st Series.

From 10·45 to 11·55—The keepers.—2nd Series.

From 12 to 12·40—Agents, workmen, and servants employed in the Exhibition.—1st Series.

From 12·45 to 1·45—Agents, workmen, and servants employed in the Exhibition.—2nd Series.

From 7·15 p.m. to 8 p.m.—Agents of all classes.

The Cantine closes at 8 o'clock in the evening.

LIST OF THE ARTICLES SUPPLIED AT THE "CANTINE MODELE," WITH THE PRICES.

*** *Five centimes may be reckoned as a halfpenny, and one franc twenty-five centimes as one shilling.*

	f.	c.
Bouillon (a kind of beef tea) without bread ...	0	15
Ditto, with bread	0	20
Common beef soup, with the beef in it	0	30
Beef (plain)	0	25
Beef à la mode	0	35
Stewed Mutton	0	35
Ditto, half the quantity .	0	20
Roast meat	0	35
Vegetables	0	20
Salads	0	20
Dessert.....	0	15
Coffee, small cup, with a small glass of brandy .	0	40
Café-gloria	0	30
Wine (the bottle)	0	90
Dito, quarter bottle ...	0	25
Burgundy	1	0
Bordeaux.....	1	25
Ditto, white	1	25
Macon (Old)	1	50
Strong beer (the bottle)	0	30
Ditto (a large glass).....	0	15
Strasburg Beer, la canette.....	0	50
StrasburgBeer,la choppe	0	25
Beer of the North, la canette	0	50
Ditto, la choppe	0	25

BIERE ANGLAISE. — (ENGLISH BEER.)

Porter		
Ale		
Common Brandy (small glass)	0	10
Best Brandy, ditto.....	0	15
Rum, ditto	0	15
Cassia, ditto	0	10
Aniseed, ditto.....	0	10
Curaçao, ditto	0	10
Absinthe, ditto	0	15
Syrup of Currants (the glass)	0	15
Ditto, d'Orgeat, ditto ...	0	15
Ditto, de Gomme, ditto.	0	15
Seltzer Water (the bottle)	0	30
Ditto (the half bottle)...	0	20

NOTICE TO INSTITUTIONS.

Mr. E. W. Martin, Hon. Sec. to the Guilford Institution, writes, "A person calling himself Frederick Young, late of Heidelberg, Professor of Elocution, and giving his address, London Mechanics' Institution, has been in this town, and upon the faith of being 'about' to deliver a Lecture on Poetry, has obtained, from several of our members, money for tickets in advance. The Lecture has *not* been delivered. The same person went to Godalming and, unwarrantably, made use of my name; there, however, I believe he did lecture."

DECIMAL COINAGE.

BY FREDERIC JAMES MINASI.

(*Concluded from page* 619.)

We have now, I believe, exhausted all the plans which are founded upon the sovereign, or some one of its chief parts, as the principal unit of account, and from which it is proposed to descend in a decimal progression to the lower coins. It remains in the last place to consider those systems which recommend an ascending ratio from a low to a higher coin.

By analogy, founded upon the division of the sovereign into 1,000 parts, Mr. Headlam, M.P., one of the witnesses before the late Committee on this subject, after adducing a series of very grave objections to that plan, proposes to found a system of decimal coinage upon the present farthing, as follows:—

10 *mils* (or farthings) = 1 *cent* or 10-mil piece = 2½d.
10 *cents* (or 100 farthings) = 1 *florin* = 2s. 1d.
10 *florins* (or 1,000 farthings) = 1 *Victoria* = £1 0s. 10d.

As a means of introducing this, sometimes called the *new guinea* plan, Mr. Headlam proposes to stamp on all existing coins, as well as upon any new ones that might be issued in accordance with the plan, the number of

farthings which it represented; thus, the sovereign would be marked "960," the Victoria "1000," the shilling "48," &c., by which he does not seem to intend that these numbers should be used as integers in accounts, but as distinguishing each coin by its value in *mils*, that is, in $\frac{1}{1000}$th parts of the Victoria, or unit. This system is, in fact, scarcely different from that we have already noticed in the plan of Mr. Alexander. The main objection to it seems to be in the conversion of the *pound* to the *Victoria*, represented in farthings; however, much of this objection may be considered as removed, and by the aid of tables and a little experience, would not prove so formidable a difficulty as at first it appears, whilst it has the advantage over the pound-and-mil system of not interfering with the copper coinage of the country at present in circulation. On the whole, however, this plan does not appear to have been very favourably received.

There is also a modification of this proposal, which would employ a silver coin of 100 farthings, or 2s. 1d., as the chief money of account; this would be similar to the two-shilling unit, but without *inconvertible* cents. Perhaps the *dollar* system may be properly placed here; it takes the halfpenny, which is considered by many to be more important than the penny, for a basis by which we might ascend to 10 halfpence, or 5d.—a very useful coin,—and 100 halfpence, or 4s. 2d.; or our dollar might be divided into 100 cents of a halfpenny each, as in America, to the money of which country we should thus have some approximation. The advantages of such a system would be its popularity, and non-interference with the money now circulating amongst us; whilst we should have the experience of the United States in the change; concerning which Mr. W. Brown, M.P., in his evidence before the Committee*, stated that "Being in the United States in 1800, when the transition was going on from the pound, shillings, and pence system of accounts to the decimal dollars and cents, as the dollar and cent currency was issued from the mint, it gradually superseded and supplanted the pounds, shillings, and pence, so that you were hardly aware of a change taking place."

As, however, it is considered that the dollar would be a silver coin, the objection already quoted relative to a silver standard has been urged against it.

The next and the final plan we shall direct our attention to is that founded upon the penny, the preservation of which is the aim of its advocates, for reasons which may be gathered from their objections,† already noticed, to the plan promoted by the Decimal Association. The main feature of this system is the formation of an ascending decimal coinage by the creation of a new coin of account of the value of *tenpence*. From the pamphlets of Mr. Rathbone, Dr. J. E. Gray, Mr. Laurie, and Mr. Turner, the details of the tenpenny system, as it is called, may be learned.

Mr. Theodore Rathbone, immediately after the appearance of the Report of the Select Committee, in August, 1853, published his first pamphlet‡ on this subject, in which he proposes his plan in the following terms:—

"The course of proceeding would be simply, as the first great step, to make *pounds*, *francs*,§ and *pence*, instead of pounds, shillings, and pence, our monies of account—and to stamp, at first, as a rude temporary expedient, on the face, or rather the reverse, of every circulating coin its decimal value in tens and hundreds; these figures, be it observed, instantly furnishing to every eye, at once both the decimal value and the actual amount of pence and tenpences, with their multiples and decimals, every coin in existence represents. Thus in all the great multitude of our ordinary transactions, in all sums whatever up to the pound sterling, the dot dividing, or the column in account separating, the two first items,—pence and tenpences, tens and hundreds,—would present the ordinary figures of account, and, at the same time, the amount decimally stated in the most pure and perfect form of decimals. The figures would, in short, ever be to this extent one and the same. Half a guinea, for instance, would be twelve francs (or tenpences) and sixpence; that is, either a 12f. 6d., or 12.6 decimal, and the coins would at once speak for themselves—the half sovereign (12·0), the sixpence (0·6),—every coin being ever thus defined and indicated. The only new money or item in our accounts, the tenpence, or franc, would, whenever this coin were issued, be clearly expressed by the stamp thereon, its thus distinctly defined value (1·0); its tenth, our present penny (0·1)—twenty francs of course would be (20·0), and the halfpenny, the five-cent piece, or French sou (0·05), &c. The ultimate regular series of coins would probably be—for those very poor districts and classes of the population which some of the witnesses represent as suffering injury and injustice from the want of more exact and minute measures of value, centimes, or (as I would propose they should be called in this country), cents, in a series of one to five—(0·01), (0.02), (0·03), (0·04), (0·05), our present halfpenny;—(0·10) indicating the penny;—(0·50) the fivepence or half franc;—(1·0), the tenpence, or franc."

These views are further enforced by Mr. Rathbone in a subsequent paper,* read before the British Association in September last.

In nearly the same terms Dr. Gray† proposes his plan for the establishment of a decimal coinage in this country. "Its great feature is," he says, "that our accounts should hereafter be kept in pence and tenpences, or *albions*.

"1. The value of the penny to be retained unaltered, in which case there could be no loss or misunderstanding as to any existing coin.

"2. All the coins at present in circulation may remain in circulation, each passing for the number of pence they now represent, as 2, 3, 4, 6 pence; the shilling as 12 pence, the halfcrown as 30 pence, the crown as 60 pence, in silver; the half-sovereign as 12 albions or 120 pence, and the sovereign as 24 albions or 240 pence. Though no longer moneys of account, they would be perfectly understood, and would be most useful for all the current purposes of life, and as coins of circulation.

"3. Only two new coins will be required, viz., the *tenpence*, which may be called an *albion*, or *alb.*, and its half or fivepence; hereafter the crown piece (6 alb., or 60 pence), may be replaced by a 5-alb. or 50-pence coin, and we may have gold coins of 10 and 20 *albs.*, 100 and 200 pence."

Mr. James Laurie, in his pamphlet already referred to, remarking upon the necessity for preserving our existing copper coinage, as having "their fixed representatives in articles of food, and in a thousand other commodities, determined by a sort of conventional law, well understood by the public, and particularly by the poorer classes," observes, that for this purpose "the integer of the decimal should be one which would comprehend every existing coin, and occasion no sort of inconvenience or loss to the

* 1194.

† See also the evidence of Mr. Headlam, M.P., before the Committee on Decimal Coinage.

‡ An Examination of the Report and Evidence of the Committee of the House of Commons on Decimal Coinage, with reference to a Simpler, Sounder, and more Comprehensive Mode of Proceeding.

§ Or *tenpence*, the term now always employed by Mr. Rathbone.

* "A Comparative Statement of the different plans of Decimal Accounts and Coinage, which have been proposed by the witnesses examined before the Committee of the House of Commons and others. By Theodore W. Rathbone; with a compendium of the scheme of pounds, florins, cents, and mils, and the scheme of pounds, tenpennies, and pence, comparatively stated; an abstract of the discussion; and 'Observations of a Merchant' on the statements of the Chairman of the Committee, Mr. Brown, M.P., and Professor De Morgan, in the Proceedings of the Decimal Association.'" Altogether this is the most complete account of the question that has yet appeared.

† Decimal Coinage, what it ought and what it ought not to be.

public when the decimal currency came into use. In this respect the integer of £1 is a complete failure,—that object can be secured by an integer of 10d. only,—and by that integer alone divisible into cents. Were the tenpenny introduced, there is not an existing coin that could not readily be adapted to such an arrangement, and the coinage as it exists would continue to circulate until it was worn out, each coin representing ten *cents* for every penny of its value. This will at once be seen by the following table of equivalents:—

The Integer			10d.	1·00
A Sovereign	£1	0	0	24.00
Half do		10	0	12·00
Crown		5	0	6·00
Half do		2	6	3·00
Florin		2	0	2·40
Shilling		1	0	1·20
Sixpence		0	6	·60
Fourpenny		0	4	·40
Threepenny		0	3	·30
Penny		0	1	·10
Halfpenny		0	½	.05
Farthing		0	¼	.02½ or .025."

As in the the case of the pound-and-mil scheme, the proposal for the *tenpenny* does not appear to be new. In a leading article of the *Times* newspaper, of the 20th of July, 1816, the following paragraph occurs:—"Since the revolution, a simple system has been adopted in France, and the coins, both of gold and silver, have been, in comparison with our own currency, perfection itself. The integral unit in this system is a piece of silver, intrinsically worth about 9½d., or 9¾d., of our legal money. If, therefore, our government would coin shillings of the same intrinsic value (that is to say, containing 69½ grains of pure silver, besides the alloy), and would make these shillings current for *tenpence*, we should have the elements of a decimal system of calculation, with little derangement of our existing accounts, inasmuch as it would only be necessary to enact, that wherever pounds sterling have been mentioned in existing contracts, the term should be taken to mean 240 pence or 24 shillings of tenpence each." At this period the feeling is said to have been friendly to the proposal, while that which divides the pound into 1000 mils, was not received with much favour.*

Recently, commenting upon Dr. J. E. Gray's pamphlet, the journal just referred to observes: "There can be little doubt, even from the experience of the past five years, that if the matter is really to depend on any organic change affecting the copper circulation, the discussion raised and the obstacles suggested will be such that no recommendations of mathematicians, however constantly reiterated, or parliamentary reports or articles in the newspapers, will succeed within any moderate space in bringing the Government to assume the trouble and responsibility of such a measure. If the desire in favour of a decimal coinage is as great as those who trust in the rough intelligence of the masses believe it to be, the argument is not unreasonably urged that they will soon voluntarily bring it into operation if simple means are offered them, while if, on the contrary, the change would be intrinsically unpopular, no compulsory measure, especially of a kind to disturb all previous ideas, could be anticipated without embarrassment. Supposing a tenpenny piece to be introduced, it must certainly be the fault of the public alone if all their calculating habits do not soon flow into the decimal direction, and, at all events, few will deny that while the philosophers are discussing more general changes, it may be well to let so simple an experiment make its way."† And subsequently, "The question seems only whether, by the simple introduction of a tenpenny piece, the people shall be instantly furnished with the means of adopting a decimal currency at their pleasure, which shall, at the same time, give them clear perceptions of the currencies of the principal countries of the world, or whether, by long philosophical efforts, the attempt shall still be made—although year after year passes without any apparent advance—to bring them at some distant but undefined day, to banish the penny in favour of the mil, and while thus gaining some of the advantages of the decimal system, to separate themselves hopelessly from any general affinity with the currencies of the nations with whom their chief intercourse is carried on."*

Against this proposal for a decimal coinage, it is argued that the employment of the number 24 in account to represent what we have been so long accustomed to call 1, would lead to very great inconvenience and confusion.

As a specimen of the fears of this class of objectors, take the following:—"£500,000 represented in dollars would stand thus, D2,000,000::00; and in francs thus, F10,000,000::0::0, say ten millions of francs. Let an Englishman picture to himself long pages in the books of the State departments of revenue and taxes, or of finances of any kind, or in mercantile books, covered with these clouds of figures from top to bottom, and then he will have some faint idea of the labour of the head and hand in France and in the United States of North America, through having their unit fixed at so very low a value as a dollar and a franc; and as to paying any very large sums in specie in those countries, it would occupy almost the life of a man to count such small coins. These are cogent reasons for continuing the sovereign or pound sterling as our highest denomination, independently of the facility of counting the coin, the expedition of adding up large sums, the beauty of the coin itself, and the greater respectability of the value."†

A further objection is taken to the tenpenny plan, on the assumed ground that it would lead to the establishment of a silver monetary standard instead of a gold one, as at present in use among us. These two objections may be regarded as the main arguments in opposition to the system now under consideration. To the first of these it may be replied that a little use would soon familiarise the minds of people with the larger numerical representations of sums now expressed in pounds; besides, Mr. Rathbone's plan would sanction the continued use of that coin for any length of time the public might be disposed to demand. Mr. Maslin's fears would certainly excite a smile from our neighbours, who, of course, are not altogether in the difficult position he represents them to be. To the second objection raised it will be sufficient, in reply, to quote the words of Dr. Gray:—

"*No change should be made in the present gold standard.*"—This rule is chiefly founded on a matter of policy, because otherwise the advocates of a decimal coinage will necessarily complicate the question by introducing disputes as to whether a gold, a gold and silver, or a silver standard is most advisable. Fortunately, this may easily be prevented by making whatever silver coin may be taken as the silver coin of account correspond with a certain fraction or portion of the sovereign. It is the more necessary to insist upon this rule, because some of the advocates of the mathematical system, and even so exact and cautious a person as Sir John Herschel, seem to think that if a florin were taken as the unit, "it assumes a silver monetary standard, whereas, for good or for evil, for better or for worse, we are married to a gold one;" and it is a general objection put forward against any other than a pound unit, that it would alter the standard of value."‡

Mr. Rathbone also observes, on the subject of a universal standard of value:—"This important question, however, the author must here again repeat, is not in any way

* See a letter from Dr. J. E. Gray, in the *Journal of the Society of Arts*, March 30, 1855.

† *Times*, April 21st, 1854, City Article.

* *Ibid*, September 20.

† A new Decimal System of Money, Weights, Measures, and Time; by Decimus Maslin, Esq.; page 23.

‡ Decimal Coinage, p. 26.

whatever mixed up with that of the present scheme. So long as gold is the standard of value in this country, the *franc* or *cent-cent* would be a twenty-fourth or twenty-fifth, as determined, of the pound sterling, if silver ever became so, the pound would be twenty-four or twenty-five, as fixed, of these tenpenny coins."*

I have thus attempted to bring before you the various plans that have been proposed for introducing a decimal system of coinage and accountancy in this country. In a mere outline of each, such as I have produced, and in so short a space as a single lecture, it must be evident that I fail in doing justice to plans which are all more or less ably treated by their respective advocates, to whose published views I would refer you for complete information. I have avoided as much as possible all reference to my own views on this matter; of course, I have views of my own; it will not be proper longer to conceal what those are. In doing so, I do not arrogate to my proposal any superiority over others, but desire in all candour to submit it with the others to your impartial consideration. I may as well say that it is a phase of the tenpenny plan that I give the preference to, and which is given at length in a paper I had the honour to read before the Statistical Society of London in June last, and which was subsequently published in their Journal.†

For some years past I have been a humble advocate for a decimal coinage. As to the plan to be adopted, I did not think any was more desirable than that which seeks to subdivide the £1 sterling into 1000 parts—a plan supported by men ranking high in science and mercantile matters; a plan that would render perfect that very simple method for the transposition at sight of shillings and pence to three decimal places of a £, so common in use among actuaries and others; a plan which seems to require a shaving only from every farthing, restored as an additional coin in the sixpence, which would count 25 instead of 24. The result of a somewhat careful consideration of the subject, has, however, shown me that it is not a question of accountancy only, but one in which numerous important interests are concerned—interests that would be best consulted and advanced by a decimal system founded upon the *penny*. The conclusions I then arrived at were:—

1. That the new system should be one free from any liability to give rise to injustice or confusion among the poor and illiterate classes of the community, thereby creating a prejudice against its use.

2. That it should not necessitate the withdrawal of the most useful and popular coins already in circulation, and with which, from habit, everyone is familiar.

3. That it should possess the greatest possible clearness in expressing its coins in the old money, and *vice versâ*.

4. That there should be but few coins of account, and those of a convenient size; and, if possible of different metals.

5. That it should be an experiment which might be withdrawn without difficulty if found inconvenient in practice.

6. That the unit of account should be a gold coin of moderate value. And,

7. That its lower denominations of account should range in value as nearly as may be with the units of currency of such foreign states as we have most important relations with.

In accordance with these requirements, I advocated the tenpenny plan just explained, with the modification of making the unit of account a gold coin‡ of the value of 10 tenpences, the effect of which would be to advance the unit of account nearer its present value, and thus aid in getting rid of the maudlin feeling which some have relative to reckoning in tenpennies, and the fears of others about a silver monetary standard. This *Imperial unit*,* or *Imperial*, as I have termed it, might then be put forth as the olive branch by which to reconcile the two chief contending elements of this question, the penny and the pound, between which it seems now acknowledged this *questio vexata* rests. The penny would remain intact, and the pound, also unaltered and uninterfered with as *a coin of currency*, numerically represented by 2·4. Quoting from my own paper on this subject, it will be seen how this plan fulfils the seven conditions previously laid down:—

"1stly. No confusion or mistrust would arise among the lower classes of the people, since the new coins could be represented in the old, while the penny would remain unaltered in name and value.

2ndly. The old coins might continue in circulation for any length of time that might be found necessary.

3rdly. The two systems are obviously convertible with great simplicity, and *all* the old coins easily represented by the new, and the reverse, thus—

Coins of the Present System.		Value in Proposed System.				
	Value in pence.	Imp.	tenp.	p.		Imp.
The penny	1	0	0	1	or	·01
The three-penny piece	3	0	0	3	,,	·03
The four-penny piece	4	0	0	4	,,	·04
The sixpence	6	0	0	6	,,	·06
The shilling	12	0	1	2	,,	·12
The florin	24	0	2	4	,,	·24
The half-crown	30	0	3	0	,,	·30
The crown	60	0	6	0	,,	·60
The half-sovereign	120	1	2	0	,,	1·20
The sovereign	240	2	4	0	,,	2.40

4thly. There would be but three coins of account, whereas the Committee names four,† so that two places of decimals would represent *tenpennies* and *pence*, or simply *pence*, if preferred, and thus the absence of a third column of figures would materially lessen the labour of addition. Also, the new coins would be of different metals, and of a convenient and, at the same time, a different size, thus precluding all chance of mistake in their use. The *imperial* would be a little smaller than the present half-sovereign, and the *tenpenny* somewhat less than a shilling piece.

The 5th and 6th requirements are also equally fulfilled. And—

Lastly. It will be observed that great facilities would be afforded to travellers and others in more easily effecting exchange operations. The *half-imperial* would represent the United States *dollar*, and the *hard dollar* of Spain and the South American States; the *tenpenny* would equally approximate to the French and Belgian *francs*, and other foreign coins of the same value; while the Dutch *guilder*, and the *florin* of Zollverein, &c., would be

* Examination of the Report, p. 40.

† September, 1854.

‡ It would not be necessary to coin all our gold in this form,—2 or 5 imperials might be issued for ordinary use.

* Elsewhere I have stated that when the old system of money had ceased to be used, it might be well to restore the familiar names of pounds, shillings, and pence, in accordance with Mr. Tate's suggestion in the *Times* of December 11th, 1853, who proposed "4 farthings = 1 penny; 10 pence = 1 shilling; 10 shillings = 1 pound." Mr. J. H. Turner, of Cambridge, in his pamphlet entitled "The Penny Considered as the Foundation of a Decimal Currency," agreeing with this idea, says—"I propose that a silver coin of ten pence shall be, and shall be called, *a shilling new currency*, and that a gold coin of one hundred pence shall be, and be called, *a pound new currency*."

† It would, I think, be better to ignore halfpence and farthings in account, as is frequently done at present, but they should still be current for the use of the poorer classes; nevertheless, if found desirable, the farthing might be withdrawn and the penny divided into ten *mites*.

indicated by *two tenpennies*. For this and other reasons it would doubtless be found convenient to coin such pieces as —

	s.	d.
The *half-imperial*, or *dollar*—value in present money	4	2
,, *forty-penny piece*	3	4
,, *twenty-penny piece*, or *guilder*	1	8
,, *five-penny piece*	0	5

Those could be struck in silver, and would eventually supply the place of those at present in circulation.

A *Victoria*, equal to *ten imperials*, or 1000*d.*, answering to the *double eagle* of the United States, would likewise be found useful, and might be made a handsome commemorative gold coin, considerably smaller than the present crown piece."

The plan, then, which I respectfully advocate, may be popularly termed that of THE DOUBLE DOLLAR WITH THE DOUBLE CENT.

If a decimal system of coinage is to be established in this country, I contend it should be at the expense of the present chief coin of account. Those who would be affected by such a change are much better able to cope with that difficulty than the poorer portion of the community with the greater and more confusing change in the copper currency. As to the difficulty of estimating large sums under a smaller unit than at present, I apprehend no one is really seriously alarmed on that point. A simple operation would transpose present money to the new system, and *vice versa*.

As examples:—

1. Express £145 in the new money.

145 × 24

290
580

Ans. 3480 *tenpennies*.
Or 348 *imperials*.

2. Express £87 15s. 9d. in new money.

87

174
348

15s. 9d. = 189d. 189

Ans. 2106·9 *tenpennies*.
Or 210·69 *imperials*.

Conversely:—

3. Reduce 348 *imperials* (or 3480 *tenpennies*) to present money.

½	348
⅙	174
Subtract	29
Ans.	£145

4. Reduce 210·69 *imperials* (or 2106·9 *tenpennies*) to present currency.

½	210		
⅙	105		
Subtract	17	10	
	87	10	
Add 69d.		5	9
Ans.	£87	15s.	9d.

These reductions might be considerably facilitated by the use of tables.

Whilst it must be acknowledged that at first sight, at least, these operations present a somewhat uninviting aspect, they are by no means difficult, and are, it will be observed, opposed to the class of persons least likely to be puzzled by them. When the new money came to be established, such processes would cease to be requisite.

Gentlemen, I now leave this matter with you, for that careful investigation its importance merits. Right glad shall I be if my poor exposition on this occasion shall prove the means of inducing the schoolmasters of Great Britain to take the part in this discussion for which they are so peculiarly qualified.

*** The Secretary begs to state that it is proposed to give in the next number of this *Journal*, a list of the authorities on the decimal coinage question. This list is in a great measure prepared, and its publication is only postponed with the view of making it as complete as possible. A proof will be sent to any gentleman on application, and the Secretary will be glad to receive any additions or suggestions relative thereto.

BRITISH IRON MANUFACTURE.

REMARKS ON THE REPORT OF THE SELECT COMMITTEE OF THE HOUSE OF COMMONS ON THE PETITION OF CONINGSBY CORT, ELDEST SON OF THE LATE MR. HENRY CORT.

BY RICHARD CORT.

GENERAL SUMMARY.

(Concluded from page 623, of No. 140.)

The readers of the *Journal of the Society of Arts* having the Report of the Committee of the House of Commons with my annotations upon it before them, paragraph by paragraph, will now be able to judge whether my father's services for *saving thirty millions sterling to the country*, were duly appreciated in 1812 or not. But even, assuming that the Committee had taken a different view of my brother's petition, and the family had received a large reward, still, that reward could only have reference to the national benefits realised up to that time, from 1788 to 1811, 23 years, while it will be seen that since then 43 additional years have elapsed. One of the principal reasons, indeed, for publishing such a narrative of these discoveries, after continuing for more than half a century in oblivion, is the fact, that the national benefits have grown up during that period to so prodigious an amount, as compared with the first 23 years, ending 1811, that they now constitute quite a *new case*, many times stronger on national grounds, for 66 years instead of 23 years; therefore, however, the case in 1812 may have been ignored or misapprehended in 1812, it can present no reasonable bar to any *new case* for nearly treble the whole period in 1855.

I am also anxious while I survive, now more than 71, to record the whole merits in the Journal of this Society, many of whose members are vitally interested in British iron manufacture, and are well qualified to judge how far the inventions of puddling and rolling bar iron during the last 66 years, have proved a *mine of iron above ground* more valuable than gold or silver for the naval and military defence of Great Britain, for the safety of our fleets, and the lives of our seamen; as well as for the daily wants of the whole human race at home, and in more than twenty other countries where British puddled and rolled iron have been used for more than half a century.

In order fully to understand and appreciate the *real case* in 1812, the view of the iron trade before and since the inventions of puddling and rolling must not be confined merely to the difference of import and export of bar iron in 1782 and 1811; for as the demand in pig iron could not be so great without puddling and rolling as with them, the real value of both inventions can only be fairly appreciated by comparing the total make of pig iron, and the state of the iron trade generally, before and after the universal adoption of puddling and rolling.

The total make of pig iron with the cheaper pit coal was not reported to be a single ton in 1782, while the total make of pig iron with the dearer charcoal fuel

had dwindled down from 300 blast furnaces to 59, and the produce from 180,000 tons annually to 17,350 tons only, for the supply of all the daily wants of the whole population of Great Britain.

The use of timber for charcoal fuel had been prohibited by various Acts of Parliament for making iron in many of the principal counties contiguous to navigable streams, particularly Essex, Kent, Surrey, and others. Every ton of pig iron required four loads of timber for charcoal fuel, and every ton of bar iron three additional loads of timber, so that even the minimum make of 17,352 tons of pig iron, required 69,400 loads of timber, at more than double the cost as compared with pit coal.

More than 30 years previous to 1782, pit coal had been tried by various parties and substituted for charcoal in the blast furnaces, particularly by the Carron Iron Company in Scotland, who had an inexhaustible supply of that fuel in the immediate vicinity of their iron works, but always unsuccessfully, owing to the very imperfect operation of blowing by large bellows moved by a water wheel. The scanty supply of air, and its want of density was such, that the produce of the blast furnace did not exceed 10 or 12 tons weekly, and in summer frequently considerably less, so that the average annual make of each furnace was less than 500 tons, which was not sufficient to afford adequate profit.

Nor could *refineries* be multiplied without a great additional means of blast, which could not be effected without powerful steam-engines, the expense of which could not be afforded while the produce of the blast furnaces scarcely averaged 500 tons annually, and while the hammered bar iron did not exceed ten tons weekly, and in quality, too, inferior for exportation; so that, in fact, *British Iron Manufacture*, previous to puddling and rolling, had actually become almost a nonentity.

At this critical juncture, when the nation was dependent on Russia and Sweden for not less than 70,000 tons of bar iron annually, at a cost in British money of nearly 2½ millions sterling year after year, my father's inventions of puddling and rolling opened quite a new field for British Iron Manufacture, by encouraging a large increase in the make of pig iron with the cheaper pit coal, instead of the dearer charcoal. For as soon as it was seen that out of common ship ballast, the coarsest kind of cast iron, my father had succeeded in rendering iron malleable in a reverberatory, or air furnace, heated by the *flame* only of pit coal, shewn by his trials in all the royal dockyards, without the aid of coke, blast, bellows or cylinder, being the process termed puddling, and that by his other invention of grooved rollers, the slow operation of the hammer could be superseded by making in one week *ten times* as much of the best quality (and now *twenty times*), as could be made under the hammer of inferior quality, the whole of the iron masters were sufficiently alive to their own interests not to feel that these discoveries, with all the requisite capital to work them, would insure to themselves the princely fortunes which they have since realised.

Hence the Carron Iron Company was among the first, in 1786, to invite my father to commence the new operations of puddling and rolling at their own works, where every facility was offered for the purpose, with an ample field of pit coal at his command. In 1788 this company had four blast furnaces at work with pit coal, which produced 4000 tons of pig iron, being more than double the average annual produce of the charcoal furnaces previous to 1782. Then followed the Colebrook Dale Company, who had been trying a process for puddling called "Buzzing," but had abandoned it as hopeless of profit before my father patented his improved method in 1783; soon after which the Colebrook Dale Company were the first to adopt the rolling process. The late Mr. Richard Crawshay, and Mr. James Cockshutt, next determined, in 1787, on the erection of new works at Cyfartha, to carry out both inventions on a great scale. The Blaenavon Iron Company, the Dowlais Iron Company, by the late Sir John Guest, and the Penydarran Iron Company, by Mr. Samuel Homfray, had all erected colossal works for the use of puddling and rolling, before the close of 1789, besides others in Staffordshire and Yorkshire, many of the iron masters having signed agreements to pay different royalties for working under the patents.

Mr. Malkin, in his publication on the Antiquities of Monmouthshire, in 1803, states, that in 1788 no bar iron was made in the whole county; whereas from 1802 to 1811, the total quantity of puddled and rolled iron sent down the Monmouthshire canal by a few companies was not less than 218,509 tons —*See* Scrivenor's work, p. 127. In 1788 the total make of charcoal pig iron was reduced from 17,350 tons to 13,100 tons. The total make of pig iron with pit coal was increased in Scotland alone to 7,000 tons, while the whole make in Great Britain had increased to 50,950 tons (*See* Scrivenor, page 88), or nearly three times the whole make of the kingdom with charcoal fuel in 1782. In 1811, the whole make of pig iron was 350,000 tons, being nearly seven times as much as the whole make of Great Britain in 1788; while the blast furnaces, instead of producing less than 500 tons annually, were producing at the works of Crawshay and Co., in South Wales, with pit coal, more than 2,600 tons annually, and the average produce in Great Britain from 162 furnaces was 1546 tons annually.—*See* Scrivenor, p. 98. The total quantity of pig iron made from 1788 to 1811 may be estimated at not less than four millions of tons, partly by returns made, and partly by estimating the make for the intervening periods, being nearly 80 times as much as the whole make in Great Britain in 1788, while the total make of puddled and rolled iron, in the same period is estimated at 2,500,000 tons, including probably 1,500,000 tons of bar, bolt, and wrought iron.—See pp. 140 and 622.

No. 1.

ESTIMATE *showing the total pecuniary Value of the National Benefits derived from Puddling and Rolling, from* 1788 *to* 1811, *for* 23 *years, from* 4,000,000 *tons of Pig Iron, making* 2,500,000 *tons of Puddled and Rolled Iron, including* 1,500,000 *tons of Bar, Bolt, and Rod Iron, out of materials previously useless, and by British Labour.*

IRON TRADE.

By total amount saved on 1,500,000 tons of puddled and rolled bar, bolt, and rod iron, from 1788 to 1811, as compared with previous operations, making from 100 to 200 tons of rolled bar iron in one week, of the best quality, instead of 10 tons in the same time under the hammer, in quality too inferior for exportation, averaging, 30s. per ton	£2,250,000
Deduct amount subscribed in 1811, at most	1,000
	£2,249,000
By total amount saved by royalties not paid on 500,000 tons of puddled, rolled, and wrought iron, from 1788 to 1798, when the patents were locked up for the debt of a public defaulter, but not for any debt for money borrowed by the patentee of the Crown, averaging 7s. 6d. per ton	187,500

MINERAL OWNERS.

By total amount saved from royalty or rent for pit coal, ironstone, and limestone, equal to 35,000,000 tons, averaging 9d. per ton	1,312,500
Total saved by the Iron Trade and Mineral Owners, ending 1811	£3,749,000

This is exclusive of the profit on the *increased* quantity of pig iron made, owing entirely to the increased quantity of malleable and bar iron by puddling and rolling.—This

amount of £3,749,000 sterling, is but a very small part of the whole national benefits realised under:—

IMPORT.

By total amount saved by *decreased* import of bar iron from 1788 to 1811, being so much less paid to foreign countries in 23 years, from returns and estimates for 681,444 tons, at a low average rate of £15 per ton £10,221,660

EXPORT.

By total amount saved by *increased* export of puddled and rolled iron, from 1788 to 1811, being so much more received from foreign countries in 23 years, for 467,268 tons of British iron, exported at a low average rate of £8 per ton . . . £3,738,144

Total saved by difference of import and export of bar iron in 23 years . . £13,959,804

N.B.—The price of the best Swedish iron from 1788 to 1811 varied from £40 to £37 6s. 8d. per ton; British bar iron from £28 to £20 per ton.

HOME TRADE.

By total amount saved from 1788 to 1811, on 2,032,732 tons of puddled and rolled iron for naval and military service, for railway, steam navigation, ship-building, house-building, agriculture, domestic use, mining, and all the other wants of the population for 23 years ending 1811, at a low average rate of £8 per ton . . £16,261,856
(Making the whole quantity including exports, 2,500,000 tons.)

Total estimated amount saved by the country out of materials previously useless, and by British labour . . . £30,221,660

Total saved by the Iron Trade and Mineral Owners 3,749,000

Total estimated aggregate saving from 1788 to 1811 . . . . . £33,970,660

Suppose it were possible to reduce the amount actually saved to £20,000,000 sterling, that alone was sufficient to redeem the whole amount paid to free her Majesty's subjects from slavery in the West Indies, and would have deserved at least a parliamentary reward.

The real case, however, in 1812 was so damaged by previous averments, denials, and imaginary defects that the House of Commons made no order even to pay the £250 to cover the expenses of the petition, although the committee had recommended the national bounty to be so far extended. The Lords of the Treasury, nevertheless, in 1816, were so satisfied that great injustice had been done to the case for want of the letters in evidence from the late Mr. Raby, Mr. Cockshutt, and Thomas Llewellyn, received after the report was made, that although they did not feel justified in acting contrary to the vote of the House of Commons as to the expenses, or even the clerks' fees, the whole not exceeding £250, they were pleased to re-open the question of compensation, by granting to two of my sisters pensions of £19 per annum each, which they continue to receive.

Having thus shown some grounds for estimating the whole pecuniary value of the national benefits, in 1812, to exceed considerably *thirty millions sterling*, the real case in 1812 may be closed by stating that—the country saved, out of materials previously useless, and by British labour, on the first 1,000 tons of puddled and rolled bar iron used for naval purposes, long before 1794, not less than £30,000, being sufficient to repay the whole grant to Harrison, in 1764, for his chronometer, as a means of ascertaining the longitude at sea, and also the grant to Dr. Jenner, for his discovery of vaccination, besides leaving £10,000, which might have been, with no less justice, awarded to the discoverer of puddling and rolling of bar iron, being not only quite as valuable for navigation, but for saving the lives of her Majesty's subjects in another way, besides adding prodigiously to the wealth, the independence, and commerce, of the nation.

We have now only to show what are the merits of the *new* case, constituting not merely the national benefits for 23 years, but for the whole 66 years, from 1788 to 1854, which will be best understood first, by contrasting the state of the trade for three years ending in 1782 and 1854, and then estimating the pecuniary value of all the national benefits for the whole period.

The total make of pig iron made with pit coal for three years, ending 1782, is not reported to be a single ton, whereas in three years ending 1854 it was more than eight millions of tons.

The total make of bar iron made with pit coal for three years ending 1782, is not reported to be a single ton, whereas in three years ending 1788, the total make was probably not less than 90,000 tons, while in 1854 it may be estimated at five millions of tons, or 4,910,000 tons more than three years ending 1788.

The total quantity of British hammered bar iron exported in three years ending in 1782, did not exceed 1000 tons, whereas the total quantity of puddled, rolled, and wrought iron exported in three years ending 1854, by the last return to parliament was not less than 2,570,216 tons, and if one-third be added for waste in conversion, the real quantity of puddled, rolled, and wrought iron exported was equal to 3,426,954 tons, being 3425 times more than it was in three years ending in 1782, besides 867,150 tons of pig iron, other sorts, 215,713 tons, total exported, 4,509,817 tons. The total make of pig iron from 1788 to 1854, 66 years, may be estimated at not less than 40 millions of tons,* and the total make of puddled, rolled, and wrought iron, 25 millions of tons, including probably 15 millions of tons of bar, bolt, or rod iron.

In 1788 there was not a single ton of bar iron made in the county of Monmouthshire, whereas, from 1802 to 1840, thirty-two companies in thirty-nine years sent down the Monmouthshire Canal 2,909,558 tons, and in addition to this quantity, only ten companies, in twenty-four years, sent down the Glamorganshire Canal, from 1817 to 1840, 2,007,527 tons, making together 4,917,085 tons of puddled and rolled iron, including more than 2,000,000 tons of bar iron. (See Scrivenor's work, p. 224, 257.)

STATEMENT, *showing the total quantity of pig iron made in four principal districts, from* 1788 *to* 1852.

—	1788	1839	1847	1852
	Tons.	Tons.	Tons.	Tons.
South Wales.....	8,200	453,880	706,680	635,000
Staffordshire and Shropshire	30,000	445,353	474,240	935,000
Scotland	7,000	196,960	539,968	775,000
Total.....	45,200	1,096,193	1,720,888	2,345,000

Thus it will be seen that, the total make of pig iron in 1852, was more than fifty times greater than in 1788, owing to the increased demand for it by puddling and rolling, while the average produce of the furnaces increased from 875 tons annually in 1788, to 3,209 tons in 1847, being the average of 623 furnaces, and 4,123 tons in 1852, being the average of 655 furnaces, being the total number of furnaces in and out of blast. (See Scrivenor, pp., 88, 295, and 302.)

The following Estimate will best show the pecuniary

* The total quantity, estimated partly by returns and partly by estimating the quantity for the intervening periods for want of returns is 50 millions, and allowing *one-fifth* for any possible over calculation, the general estimate is founded on 40 millions only.

value of the national benefit by puddling and rolling for the last sixty-six years.

ESTIMATE *showing the total pecuniary Value of all the National Benefits from* 1788 *to* 1854, *being sixty-six years, from forty millions of tons of Pig Iron, producing twenty-five millions of tons of Puddled and rolled Iron of all sorts, out of materials previously useless, and by British Labour.*

IRON TRADE.	
By total amount saved on 15,000,000 tons of puddled and rolled iron, including bar, rod, bolt, and plate iron, from 1788 to 1854 (66 years), at a low average profit of 30s. per ton	£22,500,000
By total amount of gratuity not paid on 500,000 tons of puddled and rolled iron, including bar, bolt, rod, and plate iron, from 1788 to 1798, when the patents were locked up for the debt of a public defaulter, at 7s. 6d. per ton . . .	187,500
Total amount saved	£22,687,500
Deduct total amount subscribed in 1811, at most	1,000
	£22,686,506
STEEL TRADE.	
By total amount saved on 45,000 tons of puddled and rolled iron used for the cheap cutlery instead of Swedish iron, and progressing at the rate of 15,000 tons annually, say	500,000
MINERAL OWNERS.	
By total amount saved by royalty or rent for pit coal, ironstone, and limestone, to make 33,333,333 tons of puddled and rolled iron, including one-third for waste 320,000,000 tons, averaging 9d. per ton	12,000,000
Total saved	£35,186,506
IMPORT.	
By total amount saved by *decreased* import from 1788 to 1854, for 66 years, being so much money *less* paid to foreign countries for 1,600,000 tons of bar iron, at the low average rate of £15 per ton . .	£24,000,000
EXPORT.	
By total amount saved by *increased* export of puddled and rolled iron, from 1788 to 1854, for 66 years, including bar, bolt, rod, plate, and other wrought iron, being so much money *more* received from foreign countries for 8,000,000 tons of British iron, at the low average rate of £8 per ton	64,000,000
Total saved by difference of import and export of foreign and British iron . .	
This is exclusive of the increased profit from pig iron by increased quantity made, owing entirely to the increased quantity of malleable and bar iron made by the puddling and rolling processes, which would amply compensate for any error by over-calculation or otherwise.	
HOME TRADE.	
By total amount saved by 17,000,000 tons of British puddled and rolled iron, including bar, bolt, rod, plate, and all other sorts of wrought iron from 1788 to 1854 (66 years), for naval and military service, railways, steam navigation, ship-building, house-building, domestic use, agriculture, mining, &c., at the average rate of £8 per ton	136,000,000
Total estimated aggregate saving to the country in 66 years	£259,186,506

The whole of these calculations are based partly on official returns, and partly on the best estimate that could be made in the absence of other data. Those who are practically engaged in the *Iron Trade*, will be best able to detect any error from over or under calculation. But enough will result, whatever the correction may be, to show that while as Shakespeare says—

"The evil that some men do lives after them."

the good alone in my father's case survives, and is progressing year after year more and more prodigiously.

Lord Brougham (31st July 1855) drew the attention of the House of Lords to a report which he believed was not unfounded, of the withdrawal of the grant of £1000 per annum, which had been for the last four or five years voted by parliament to the Royal Society for the Promotion of Science. The most eminent men concurred in saying, that the utmost possible good had been achieved by the outlay of this very moderate sum in the advancement of science. Parliament had voted wisely nearly £80,000 for the promotion of the arts and the diffusion of science. A learned friend of his lordship, writing from Paris, observed, "that the French and other Continental nations had made the most extraordinary progress in steam engines and machinery, and was mortified to see what a poor figure we cut at the Great Exhibition in the department of philosophical instruments, *all the prizes having been won by foreign, not English inventors!*" This was attributed to the neglect and discouragement experienced by those who contribute in any shape to the public good in this country by their inventions or scientific pursuits.

Among the authorities who have borne honourable testimony to the merits of my father's inventions for puddling and rolling, besides those elsewhere named in 1789, are Sir John Dalrymple, Dr. Watson, the Bishop of Landaff, the Rev. Archdeacon Cox, in his History of Monmouthshire, Dr. Ure, in his Dictionary of Arts and Sciences, and the editors of the Encyclopædia Britannica in 1824, who after giving a full description of both inventions illustrated by drawings of the works and machinery, remark, "It is painful to know that incalculable as have been, and are likely to be, the national advantages derived from the puddling and rolling processes, which have given England the command of all the markets of the world, Mr. Cort, the inventor, after expending an ample fortune in bringing the system to perfection, died, and a respectable family survives without having received any public acknowledgment or adequate compensation for his losses."

Still more recently Mr. Charles Sanderson, manufacturer at Sheffield, in his admirable Essay on steel, read to the Society on the 9th May, 1855, and for which he received the prize medal, observes—"It is well known that the process of puddling and rolling was the invention of Mr. Cort, of Gosport; it was introduced in 1784, before which period the charcoal finery alone was used. This invention opened a new and extensive field for the industry of the nation; coal became the medium of the manufacture of wrought iron instead of charcoal, and the process has expanded the production of this kingdom from 17,000 tons in 1782, to 3,000,000 tons in 1854. The facility with which malleable iron can be produced with coal has caused the erection of magnificent and colossal iron-works, finding profitable employment for a great number of men, and producing throughout the ramifications of its manufacture, and its subsequent uses, an amount of wealth almost incalculable. This is somewhat foreign to the subject, excepting that, by the use of this invention, the steel iron market is annually supplied with 15,000 tons; and to me it is a pleasure, as it is a pride, to bring forward to public notice the inventions of a man which have produced such astonishing results in our works, our railways, and steam navigation."

Mr. David Mushet, jun., in his remarks on Mr. Sanderson's Essay, observes, "Mr. Sanderson says well, it is a pleasure as it is a pride to refer publicly to the merits

of such inventors as Mr. Cort, yet it is said, that proud as we justly are of their achievements, a feeling of shame clouds the recollection of those merits. Cort expended a large fortune in perfecting the puddling and rolling process; he left it a legacy to wealthy recipients, who give his memory praises which cost nothing to bestow, while his descendants have received no further acknowledgment or reward."

The late Mr. David Mushet, of Coleford, in the county of Gloucester, iron manufacturer, who died in 1847, was the well-known author of many valuable publications on iron and steel, and celebrated for his knowledge and skill in the valuation of the mineral districts. In 1801 he discovered, in crossing the river Calder, in the parish of Monkland, a new vein of ironstone, called the Black Band, and ever since known in Scotland as "Mushet's Black Band." This discovery alone, in all the iron districts in Great Britain, has added greatly to the profit of the iron-masters. Mr. Mushet also discovered the means of making bar and other iron out of the refuse or slag from smelting copper ore. Patents were granted to himself and Mr. William Crawshay, in 1818, for this invention. Mr. David Mushet, jun., inherits not only a considerable portion of his father's property, but his mind and talent in the art of making iron, and the science of metallurgy and mineralogy, as many valuable publications from his pen attest.

The make of pig iron in Scotland in 1788 was only 7,000 tons, whereas, in three years ending 1853 it was considerably more that *two millions of tons*, the whole of which may be attributed to three discoveries, "Mushet's Black Band" ironstone, "Neilson's hot blast," and lastly, though not least, *puddling and rolling*, without which the total make of pig-iron, and consumption of pit coal and ironstone, would have been comparatively trifling.

Mr. Scrivenor, also, in his able "History of the Iron Trade," after giving the best part of a chapter on Mr. Cort's inventions, and the petition to the House of Commons, observes, page 19, "Neither Mr. Cort nor his family derived any advantage from these most important and valuable discoveries, which have given to this country the markets of the world. To give some idea of the importance of Mr. Cort's invention of the rollers, it may be as well here to mention that, previous to their introduction, the smallest size drawn under the hammer was three-quarters square—all below that size were cut in the splitting mill, and it required the hammer to be kept constantly at work to draw 20 cwt. of average sizes in twelve hours, while, with the rollers, they can manufacture in the same time, with one pair of rollers, about fifteen tons, which, in a work in full operation, are kept constantly employed day and night, during six days of the week; of the small sizes they roll about five tons in the twelve hours."

The whole case for 1855 cannot, perhaps, conclude better than by publishing the following extract, by permission, from the letter of Mr. Charles Sanderson, dated 24th April, 1855.

"The seizure of your father's works, trade, and all his property, with the locking up of his patent rights for ten years for the debt of a public defaulter, without benefitting either the State or himself, was a cruel sacrifice, considering also the immense amount of wealth these great inventions, puddling and rolling, have brought to the country. I think the present parties in office should in some measure seek to repair the past, by making a suitable allowance for you at your time of life. I hope for the encouragement of men of science that the government will listen to your claims, as no distance of time should be allowed to blot out national services, which *time* alone could best fully establish, not so much for the acquisition of the money, but as a just compensation for the ill-requited merits of your father, I have carefully looked over the printed statement of facts and proofs, and find your calculations on the whole correct as regards difference of import and export of foreign and British iron. You have a right to call for national acknowledgement, and I should be glad to learn how I could assist you to obtain it."

Home Correspondence.

SOCIETY'S VISIT TO PARIS.

Allenheads Haydon Bridge,
July 28, 1855.

SIR,—The period of *eleven* days appears *much too short* to answer the purposes of those who really intend to study carefully the contents of the Paris Exhibition, or any important section of them.

Special Tickets might be arranged so as to include at least the whole of September, an extension of time which would be fully justified under the circumstances.

Considerable part of from four to six days would be occupied in travelling to London, thence to and from Paris, and returning to any part of the provinces in the midland, northern, or western parts of the United Kingdom; and it requires nearly three days even to walk through the miles of galleries in the Palace and its various adjuncts. Many would probably go who have not been, or may never again be in Paris, and little time would, therefore, be afforded to see any of its wonders, and when it is considered that the expense of travelling is to many the most serious part of the undertaking, it seems in every respect desirable to allow ample time not only to remain in Paris, but to examine some of the interesting towns (especially Rouen) on the way to or from. I have spent several days in the Exhibition, and purpose going again, from the very circumstance of not having been able to see more than a very small portion of its contents.

I observe a letter in this week's *Journal*, p. 623. The outline there given of what is to be *seen* strongly confirms my argument; and though the various places may be hastily glanced at in a few days, examination and instruction are out of the question. I strongly recommend M. Baillot as an intelligent and useful agent.

It would be most useful to workmen if a printed sheet or small book of information were prepared suitable for the occasion, showing French and English *money* and *weights*. One good effect of such a publication would be to familiarise the public mind to decimal weights and money, and this is the more important as it is very doubtful that in either one or the other any improvement can be made on the French system. This, if adopted by England, would probably be followed in many European states.

It may interest many, and especially active young persons, to whom time is not so much an object as cost, to know that *for less than five pounds*, they may obtain when in Paris a ticket which entirely clears all cost of railways and steamboats from Paris to Amiens, Lille, Brussels, Aix-la-Chapelle, Leige, Cologne, Bonn, Coblenz, Mayence, Weisbaden, Frankfort, Heidelberg, Baden-Baden, Strasburg, Nancy, and so back to Paris,—a route which may be comfortably made in a fortnight, but for which the railway authorities wisely allow a month. Having taken this little round when last in Paris, I can strongly recommend the excellence of the arrangement.

I am, Sir, yours truly,
THOS. SOPWITH.

PARIS EXHIBITION—LIVING IN PARIS.

SIR,—As the Council of the Society of Arts are about making arrangements for a visit to Paris, I take the liberty of offering a few remarks, which I hope will not be deemed impertinent.

A most intimate knowledge of Paris and of its environs, acquired during a residence of more than twenty years in that city, and by frequent visits since I have resided in

England, enable me to make a few suggestions, which, perhaps, may not be unworthy of notice. The suggestions of your correspondent, Mr. Reid, of Greenwich, are truly valuable, yet in my opinion they leave room for ameliorations, which may render them more useful, not only to artizans, but also to persons in easier circumstances, who may be attracted to Paris by the splendid exhibition, which is so worthy of admiration.

With respect to the remuneration of guides, Mr. Reid mentions *ten francs* a day, with restaurant expenses, &c., Now I beg to state that honest and intelligent men may be engaged on much less onerous conditions. They may be found on application at most of the hotels, or at Messrs. Galignani's No. 18, Rue Vivienne, near the Bourse, and sometimes at the money changers. While speaking of money, I would advise persons going to Paris not to change their English money (except a sovereign or so) until they arrive there; it will be more advantageous. The rate of exchange is, at present, 25 francs for the pound sterling. Changers may be found in abundance on the Boulevard des Italiens, in the Rue de la Paix, and in the Palais Royal. There is a very fair-dealing one at the corner of the Rue de la Paix and the Boulevard des Italiens.

Your correspondent, Mr. Reid, recommends private lodgings in preference to hotels, and he is right in so doing, because at the hotels they expect you to take your meals, which economists will find rather an expensive mode of living. Private rooms are to be found in what are called *Maisons Meublées*, at about two francs a day, in respectable houses, on the third and fourth floors; they charge, however, 10 sous, or half a franc per diem, for service (servants), to whom you are not expected to give anything when you leave.

Foreigners ought to remark a distinction between *Maisons Meublées* and *Maisons Garnies*; the latter are certainly the more economical, but not the more respectable of the two classes; they abound in the Pays Latin, or Quartier Latin, or Student's Quarter; but although you may there be treading the most classic ground of Paris, it would be too great a stretch of toleration to recommend it as the most holy, any more than the purlieus of the Palais Royal.

Mr. Reid mentions also the Barrières of Clichy and of Montmartre; he might have added that they are rather out of the way places, and to be reached only by going up a hill about twice as long and twice as steep as Holborn-hill,—not very inviting, after running about all day lionising. It is true there are omnibuses to drag you up, but what says dame economy?

With regard to living, Mr. Reid's suggestions are worthy of attention, but I may be allowed to add that good dinners, consisting of a basin of soup, two plates of meat, or one of meat and one of vegetables, half a bottle of wine, bread and a dessert, may be had for 1 franc 8 sous, and 2 sous waiter, making a franc and a half, or fifteen pence, at several restaurateurs in the Palais Royal, and particularly at the Restaurant du Havre, No. 123, in the arcade or gallery, in the Garden of the Palais Royal, *eastern* side.

I must also remark that, generally speaking, dinners are served in much better style at the French restaurateurs than at those professing to be English, which latter partake more of the cook-shop. This I have frequently perceived, and very recently, at one of the houses mentioned by Mr. Reid near the Bourse. Economy persuaded me to try a dinner there one day, but prudence and a love of cleanliness forbade me to repeat my visit. Wine-and-water is, I think, a more wholesome beverage than beer, at Paris—the French beer being rather windy.

Now with regard to the routes; that by Newhaven and Dieppe certainly offers great inducements in an economical point of view, but the sea part of the journey being so long, is a great drawback for those who prefer two hours, or an hour-and-a-half, sea-sickness, to six or eight hours of that delectable feeling, in which the only consolation is—that my lord Duke or my lady Duchess are reduced to a level with plain Mr. and Mrs. Smith.

The journey by Folkestone and Boulogne is more direct than that by Dover and Calais; it can be done in thirteen hours, and if the South Eastern Company will reduce their fares, I think many persons will prefer that route, as the sea voyage is done in two hours, and sometimes in less.

On arriving at the station at Paris, omnibuses will be found ready to take you to any quarter of the town; besides which, lodgings are to be had at several houses opposite the station, which is not more than ten minutes' walk from the Boulevards. Travellers will remark, on the railways in France, posts indicating the distances, which are calculated in *kilometres*, each being about 5-8ths of an English mile, so that by multiplying the number of *kilometres* by 5 and dividing the product by 8, you will find the number of miles. For example—from Boulogne to Paris is 272 kilometres, which, multiplied by 5, gives 1,360; divide that by 8, and you will have 170 for miles.

With respect to the Exhibition, the arrangements are admirable. I have visited it several times within the last fortnight, both on the cheap and on the dear days, and have remarked with pleasure that the only difference observable between the four-sous and the five-franc days was, in the costliness (not cleanliness) of toilette. Decorum prevailed as much on one day as on the others.

A few words on Parisian omnibuses may not be unacceptable. There is a convenience attending them which does not exist in London; it is, that in whatever quarter you may be, you may find an omnibus that will take you to whatever quarter you may wish to go. You have only to tell the conductor where you desire to go, and if his omnibus is not going there, he will, without any additional charge, put you into another which crosses his line. This is called correspondence.

Now, at the risk of being "written down" in the Puffiad, I will venture to recommend a little book which will be found very useful to those who go to Paris *via* Calais or Boulogne. It is called, *Manuel Classique de Conversations Françaises et Anglaises*, containing itineraries, in form of dialogues, describing the various places which are seen from the line. It is to be procured either at Nutt's, near St. Clement's-church; or at Dulau's, in Soho-square.

Apologising for this long epistle, I am, sir, yours truly,

PERCY SADLER,

One of the Committee of the Hackney Institution.

High-street, Homerton, July 31, 1855.

MEETING FOR THE ENSUIFG WEEK.

FRI. Royal Botanic, 1 p.m., Anniversary.

PARLIAMENTARY REPORTS.

SESSIONAL PRINTED PAPERS.

Delivered on 20th July, 1855.

Par. No.
140. Civil Service—Supplementary Estimate, Class 4.
412. Poor Law, &c. (Ireland)—Copy of Correspondence.
414. Ordnance—Supplementary Estimate, &c.
417. Ballast Heavers—Copies of Letters.
Charity Commission—Supplemental Report.
Railways—Report of the Railway Department, Board of Trade.
Public General Acts—Cap. 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, and 58.

Delivered on 27th July, 1855.

403. Powers vested in the Companies for the Improvement of Land—Map.
63. Trade and Navigation Accounts (30th June, 1855).
140. Civil Services, Estimates—Class 7.
269. Bills—Customs Laws, Consolidation (amended).
270. Bills—Customs Tariff Acts Amendment and Consolidation (amended).
271. Bills—Crime and Outrage (Ireland) Act Continuance.
272. Bills—Religious Worship (as amended by the Lords).
273. Bills—Dwelling Houses (Scotland) (as amended by the Lords).

Delivered on 28th and 30th July, 1855.

140. Civil Services Estimates—General Abstract.

370. Yeomanry Corps—Return (a Corrected Copy).
384. Mr. Brownrigg—Copy of Correspondence, &c.
401. London Writs—Second Report from the Committee.
418. Caledonian Canal—Fiftieth Report of Commissioners.
419. Capital Punishment (Scotland)—Return.
422. Commissariat—Supplementary Estimate.
427. Sale of Beer, &c. Act—Second Report from the Committee.
274. Bills—Dwellings for Labouring Classes.
252. Bills—Vaccination.
275. Bills—Burials.
276. Bills—Turnpike Acts Continuance (No. 2).
277. Bills—Militia Ballots Suspension.
278. Bills—Sale of Beer, &c.
Shipping Dues (Scotland, the Channel Islands, &c.)—Report of the Commissioners.
Delivered on 31st July, 1855.
426. Army Commissions—Return.
433. National Gallery—Copy of a Treasury Minute.
251. Bill—Court of Chancery (Ireland).

PATENT LAW AMENDMENT ACT, 1852.

APPLICATIONS FOR PATENTS AND PROTECTION ALLOWED.

[*From Gazette, July 27th*, 1855.]

Dated 31st March, 1855.
723. W. H. Balmain, St. Helen's—Recovering oxide of manganese from chlorine.
Dated 4th May, 1855.
997. J P. de Frontin, Agen, France—New material for paper.
Dated 9th July, 1855.
1530. R. Roberts and G. Coppock, Heaton Norris—Looms.
1531. H. E. Flynn, Ranelagh, Dublin—Preventing fire from overheating of flues.
1532. J. Prophet, Broughty Ferry—Confectionery.
1533. J. Tetlow, Oldham—Spinning machinery.
1535. A. V. Newton, 66, Chancery lane—Fire and burglar proof glass. (A communication.)
1536. J. and A. B. Seithen, Regent's-square—Cork cutting machinery.
Dated 10th July, 1855.
1539. J. Palmer, Oldham—Carding machinery.
1541. R. A. Brooman, 166, Fleet-street—Securing wheels upon axles. (A communication.)
1543. C. J. C. Elkington, Hall-street, City-road—Depositing alloys of metals.
Dated 11th July, 1855.
1544. H. Pratt, Worcester—Mills. (Partly a communication.)
1545. J. H. Johnson, 47, Lincoln's-inn-fields—Facilitating performance of music on organs, pianos, &c. (A communication.)
1546. J. H. Johnson, 47, Lincoln's-inn-fields—Permanent way of railways. (A communication.)
1547. J. H. Nalder, Alvescott, Oxford—Dressing grain.
1548. J. Wilson, Manningham, near Bradford—Rolling or piece boards.
1549. E. Hart, Nottingham—Lace.
1550. J. Coulson, Penzance—Ventilating mines.
1551. J. Jeffreys, Kingston-hill—Sun blinds.
1553. J. Jeffreys, Kingston-hill—Steam boilers.
1554. J. Adams, Aldwincle, Northampton—Time indicator.
1555. C. F. Bielefeld, Wellington-street, Strand—Saddle-trees.
1556. W. Williams, Bedford—Bricks, pipes, and tiles.
Dated 12th July, 1855.
1558. J. Robinson and W. Wedding, Manchester—Machinery for cutting paper, &c.
1560. F. H. Edwards, Newcastle-upon-Tyne—Motive power.
1562. J. Caldow and J. B. A. M'Kennel, Dumfries—Cutting vegetable substances.
Dated 13th July, 1855.
1566. J. H. Tuck, Pall-mall—Condensing or exhausting atmospheric air. (A communication.)
1568. T. Redmayne, Rotherham—Stove grates.
1570. S. C. Lister, Bradford—Weaving.
1572. R. Cochran, Glasgow—Preparation of clay for potter's use.
1574. E. Gillett, Bruxelles—Fixing artificial teeth.
1576. R. A. Brooman, 166, Fleet-street—Pumps. (A communication.)
1578. L. Koch, New York—Making pulp from wood, &c.
1580. H. Grafton, Rolles-buildings, Fetter-lane—Fire lighters.
1582. C. L. Neale, 1, Chapel-place, Cavendish-square—Neuralgic specific.

INVENTION WITH COMPLETE SPECIFICATIONS FILED.

1658. J. Tildesley, Willenhall—Curry-combs.—21st July, 1855.

WEEKLY LIST OF PATENTS SEALED.

Sealed July 27th, 1855.
254. Patrick Moir Crane, Athy, Kildare—Improvements in the manufacture of products from peat.
269. Ebenezer Hartnall, 1, St. Mary-axe—Improvements in preserving animal and vegetable substances for food.
293. George Briggs, Wigmore-street—Improved spring for carriages.
317. William Balk, Ipswich—Improvements in machinery for crushing grain and other substances.
321. George Rennie, Holland-street — Improvements in marine steam-engines.
355. Samuel Barlow Wright, Parkfields, Stone, Staffordshire—Improvements in the manufacture of encaustic tiles.
415. Hamilton Martin and Joseph Smethurst, Guide Bridge Iron Works, near Manchester—Improvements in the construction of fences or casings for shafts, pulleys, and other parts of machinery.
445. Henry Constantine Jennings, 8, Great Tower-street—Improvement in the manufacture of soap.
779. William Tuer, William Hodgson, Robert Hall, and Samuel Hall, Bury—Improvements in looms for weaving.
1045. George Taylor, Liverpool—Improvements in steam-engine governors.
1079. François Alphonse Theroulde, 15, Place Vendome, Paris—Improvements in preserving animal substances.
1123. Edmund Morewood and George Rogers, Enfield—Improvement in coating wrought iron.
1129. Henry Hough Watson, Little Bolton, and James Oliver, Over Hulton—Improvements in the manufacture of fuel.
1159. James Eden, Lytham—Improved mode of drying fabrics.
1163. Alfred Vincent Newton, 66, Chancery-lane—Improvements in beehives.
1207. Thomas Waterhouse, Claremont-place, Sheffield—Improvements in the means of actuating forge and other hammers, which improvements are also applicable to pile-driving and other like purposes.
1223. Daniel Dunn, 9, King's-road, Pentonville—Improvements in steam-boilers.
Sealed July 31st, 1855.
245. Alexander Prince, 4, Trafalgar-square, Charing cross—Improvements in fire arms.
256. Robert James Mary'on, 37, York-road, Lambeth—Improvement or improvements in the construction of and manufacture of bullets, or shot, or projectiles.
258. Edmund Clegg and James Leach, Shore Mill, near Littleborough—Improvements in temples for looms.
270. John Imray, 64, Bridge-road, Lambeth—Improvements in measuring instruments.
272. Pierre Joseph Carré, Asnières, Seine—Improvements in ornamenting fabrics with metal leaf.
278. Frederick Gray, Birmingham—Improvements in candlesticks.
298. Adolphe Girard, Pertuis, Vaucluse, France—Improvements in extinguishing fires.
390. Charles Low, Bodowen, Dolgelly, N. Wales—Improvements in the extraction of gold from its ores.
446. Thomas Cook, Lieut. R.N, Addiscombe—Improvements in working punkas and apparatus for agitating air in churches, hospitals, and other buildings.
474. William Johnson, 47, Lincoln's-inn-fields—Improvements in cleansing and preparing fibrous materials. (A communication.)
492. James Wood, 30, Barbican—Improvements in ornamenting woven fabrics for bookbinders and others.
610. Vincent Scully and Bennett Johns Heywood, Dublin—Improved mode of regulating the supply of gas to gas burners.
618. William Smith, Little Woolstone, Fenny Stratford—Improvements in ploughing or trenching and subsoiling land.
642. John Henry Johnson, 47, Lincoln's-inn-fields—Improvements in hydraulic motive power engines. (A communication.)
1044. Duncan Morrison, Bordesley Works, Birmingham—Improvements in the manufacture of metallic bedsteads, sofas, and other articles to sit or recline on.
1094. John Lackmann, Hamburgh—Improvement in the manufacture of sheet iron.
1153. George Collier, Halifax—Improvements in looms for weaving carpets and other fabrics.
1304. John Andrus Reynolds, M.D., Elmira, New York—Improved machinery for discharging vollies of shot.
1310. Peter Armand le Comte de Fontaine Moreau, 4, South-street, Finsbury—Improvements in the manufacture of iron shovels.
1316. Etienne Jules Lafond, and Count Louis Alfred de Chatauvillard, Belleville, near Paris—Improvements in apparatus for lighting.
1326. Henry Bernoulli Barlow, Manchester—Improvements in certain parts of machines used in slubbing and roving cotton and other fibrous materials.

WEEKLY LIST OF DESIGNS FOR ARTICLES OF UTILITY REGISTERED.

No. in the Register.	Date of Registration.	Title.	Proprietors' Name.	Address.
3740	July 27.	Improved Camp Cloak or Coat, which also forms a Tent suitable for Military or other purposes	John Singleton Copley Hill, and Clement Coe.....	Manchester. Leeds.